

# TEST REPORT

Report number : Z01C-04098

Issue date : February 3, 2005

The device, as described herewith, was tested pursuant to applicable test procedure and complies with the requirements of;

FCC Part15 Subpart B  
**- Class II Permissive Change -**

The EUT complies with section 15.37 "Transition provision for compliance with the rules".  
The test results are traceable to the international or national standards.

Applicant	:	FUJITSU ISOTEC LIMITED 135, Higashinozaki, Hobara-machi, Date-gun, Fukushima 960-0695 Japan Phone: +81-24-575-2191 Fax: +81-24-574-2277
Equipment under test (EUT)	:	Dot Matrix Printer
FCC ID	:	KHZ005M3388A
Trade Name	:	FUJITSU ISOTEC LIMITED
Model number	:	M3388A
Serial number	:	MA777051
EUT condition	:	Production

Date of test : March 31, 2004  
Test place : OATS  
ZACTA Technology Corporation Yonezawa Testing Center  
4149-7 Hachimanpara 5-chome  
Yonezawa-shi Yamagata 992-1128 Japan  
Phone:+81-238-28-2880 Fax:+81-238-28-2888  
Test results : Complied

Zacta Technology Corporation certifies that no party to the application is subject to a denial of federal benefits, that include FCC benefits, pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21U.S.C. 853(a).

The results in this report are applicable only to the samples tested.  
This report shall not be re-produced except in full without the written approval of ZACTA Technology Corporation.

Authorized by: Kiyoshi Endo  
General Manager of EMC Technical Division

**NVLAP**<sup>®</sup>  
NVLAP LAB CODE 200306-0

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## ***1. Summary of Test***

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### **1.1 Purpose of the test**

The purpose of the test is to confirm that the EUT is in compliance with the conducted emissions limits 15.107 adopted under FCC 02-157 (ET Docket 98-80) with FCC Part 15 Subpart B.

### **1.2 Test standards**

FCC Part 15 Subpart B

### **1.3 Emission measurement**

<b>Test item</b>	<b>Test method</b>	<b>Classification of EUT</b>	<b>Test</b>
Conducted emission at mains port	ANSI C63.4-2001	Class B	Applied
Radiated emission	ANSI C63.4-2001	Class B	Not applied

Note : Only the measurement of Conducted emission at mains port were performed. Refer to section 1.1 Purpose of the test.

## 2. Equipment Under Test

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### 2.1 EUT information

No.	EUT	Company	Model No.	Serial No.	DoC/FCC ID	Comment
1	Dot Matrix Printer	FIJITSU ISOTEC LIMITED	M3388A	MA777051	KHZ005M3388A	-
2	Cut Sheet Feeder	FIJITSU ISOTEC LIMITED	ASF100-FJ3701	200410682	N/A	Option

Max. used frequency : 20MHz

Power ratings : AC 100-120V 50/60Hz  
[Power supply for EUT in testing was AC 120V 60Hz.]

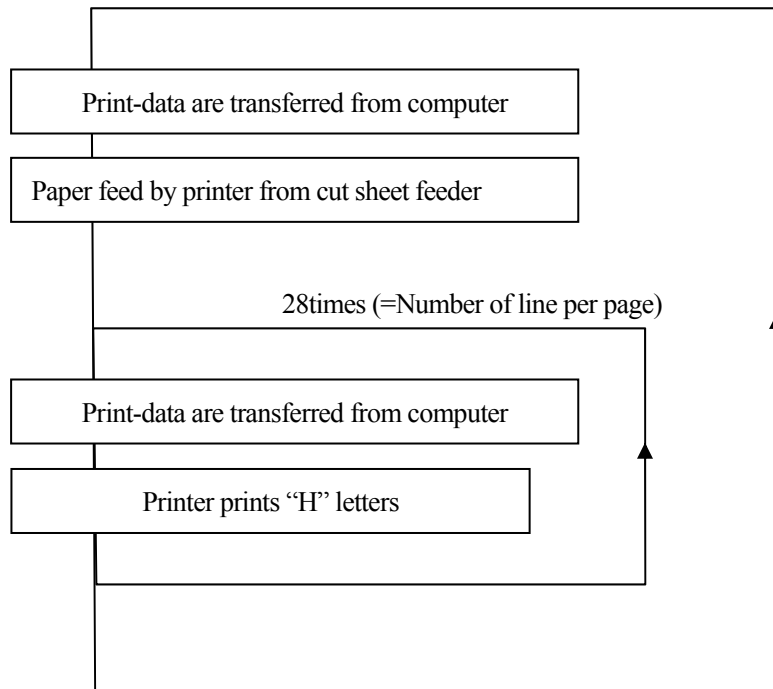
Port(s) : Serial I/F  
Parallel I/F

Size : (W) 434 x (D) 332 x (H) 133mm

Variation of model(s) : Not applicable

## 2.2 Operating mode

Serial I/F mode, Parallel I/F mode



### 3. Configuration of equipment

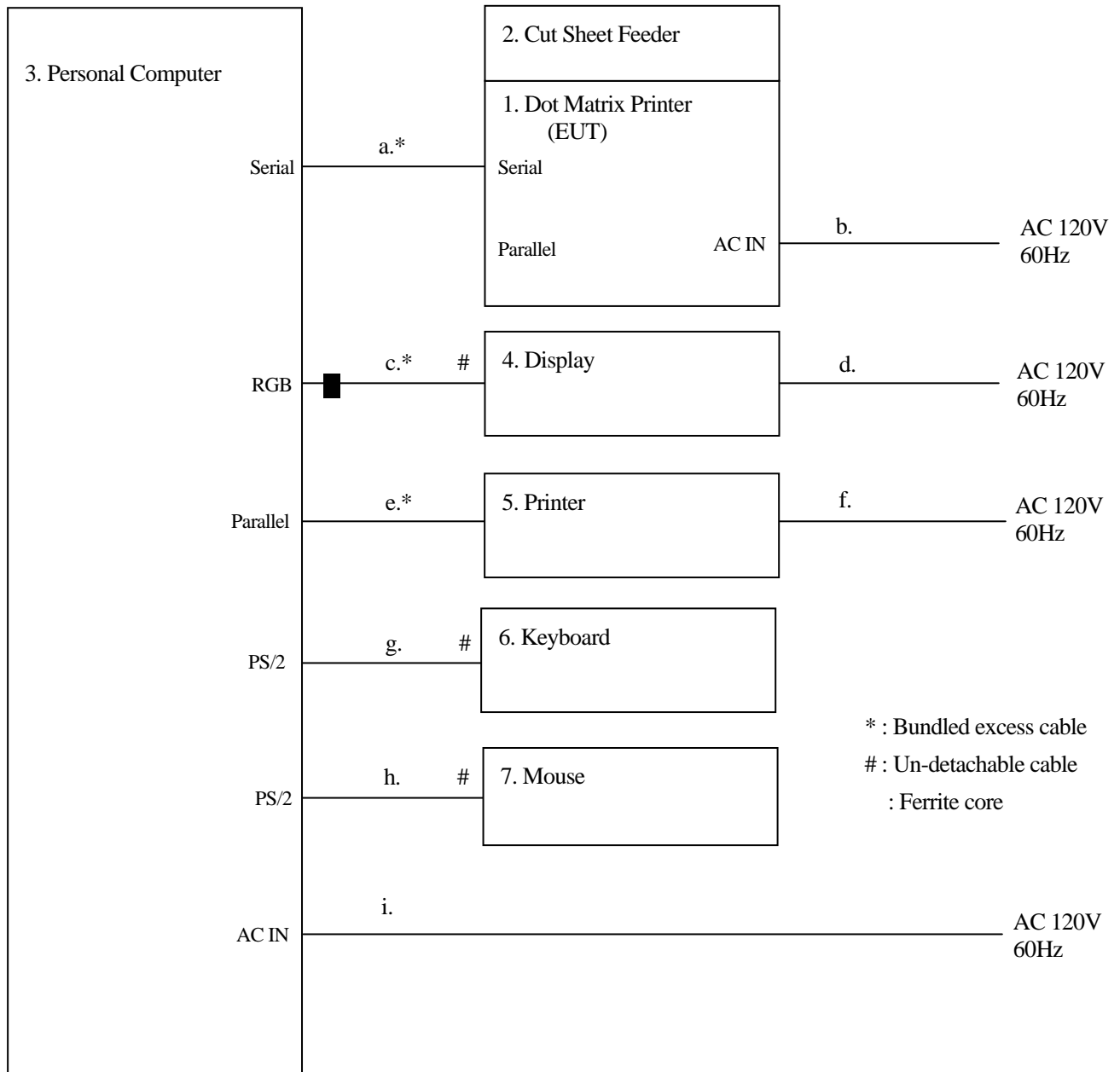
#### 3.1 Peripheral(s) used [Serial I/F mode]

No.	Equipment	Company	Model No.	Serial No.	DoC / FCC ID	Comment
3	Personal Computer	DELL	DCS	T3LWV	DoC	-
4	Display	DELL	E551	MY-044NEK-46632 -0CB-9122	DoC	-
5	Printer	HP	C4555A	US6BC212N	B94C4555X	-
6	Keyboard	DELL	SK-1000REW	M980265381	GYUR36SK	-
7	Mouse	Microsoft	Mouse Port Compatible Mouse2.1A	N/A	C3KKMP1	-

#### 3.2 Cable(s) used [Serial I/F mode]

No.	Cable	Length[m]	Shield	Connector	From	To	Comment
a	Serial cable	2.0	Shielded	Metal	PC	EUT	-
b	AC power cord for EUT	2.0	Unshielded	Plastic	EUT	AC outlet	Accessory
c	RGB cable	2.0	Shielded	Metal	PC	Display	-
d	AC power cord for Display	1.8	Unshielded	Plastic	Display	AC outlet	-
e	Parallel cable	2.1	Shielded	Metal	PC	Printer	-
f	AC power cord for Printer	2.7	Unshielded	Plastic	Printer	AC outlet	-
g	Keyboard cable	1.9	Unshielded	Metal	PC	Keyboard	-
h	Mouse cable	1.9	Unshielded	Metal	PC	Mouse	-
i	AC power cord for PC	2.0	Unshielded	Plastic	PC	AC outlet	-

**3.3 System configuration [Serial I/F mode]**



Note 1: Numbers assigned to equipment or cables on this diagram correspond to the list in "2.1 EUT information", "3.1 Peripheral(s) used" and "3.2 Cable(s) used".

Note 2: RGB cable (No.c) with one ferrite core is accessory for Display (No.4).

**3.4 Peripheral(s) used [Parallel I/F mode]**

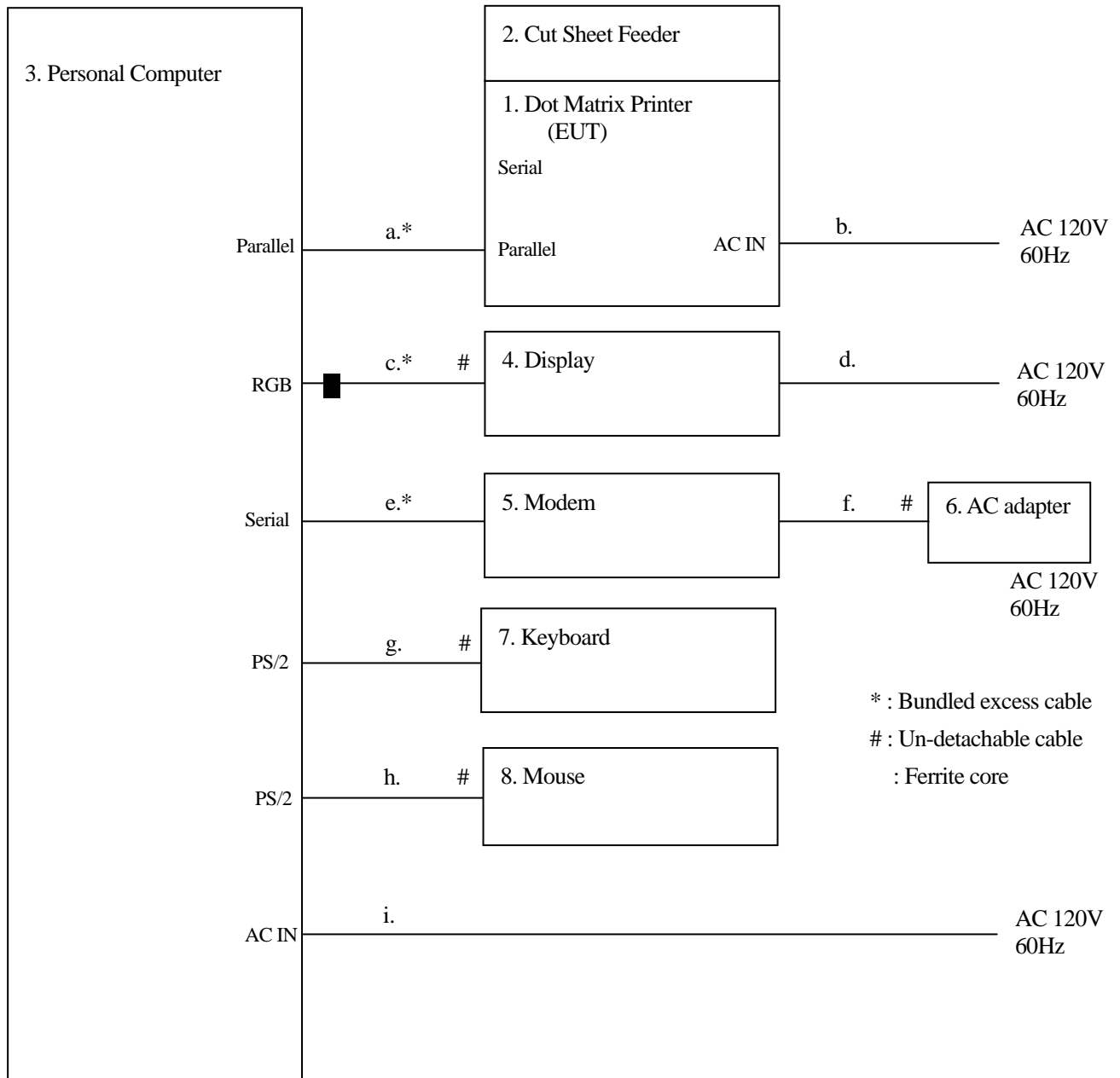
No.	Equipment	Company	Model No.	Serial No.	DoC / FCC ID	Comment
3	Personal Computer	DELL	DCS	T3LWV	DoC	-
4	Display	DELL	E551	MY-044NEK-46632 -0CB-9122	DoC	-
5	Modem	US. Robotics	Sport_Ster 33.6Kbps	000839032BK6YV4J	DoC	-
6	AC Adaptor for Modem	US. Robotics	N/A	N/A	N/A	-
7	Keyboard	DELL	SK-1000REW	M980265381	GYUR36SK	-
8	Mouse	Microsoft	Mouse Port Compatible Mouse2.1A	N/A	C3KKMP1	-

**3.5 Cable(s) used [Parallel I/F mode]**

No.	Cable	Length[m]	Shield	Connector	From	To	Comment
a	Parallel cable	1.5	Shielded	Metal	PC	EUT	-
b	AC power cord for EUT	2.0	Unshielded	Plastic	EUT	AC outlet	Accessory
c	RGB cable	2.0	Shielded	Metal	PC	Display	-
d	AC power cord for Display	1.8	Unshielded	Plastic	Display	AC outlet	-
e	Serial cable	1.5	Shielded	Metal	PC	Modem	-
f	DC cable for Modem AC adapter	1.7	Unshielded	Plastic	Modem	AC adapter	-
g	Keyboard cable	1.9	Unshielded	Metal	PC	Keyboard	-
h	Mouse cable	1.9	Unshielded	Metal	PC	Mouse	-
i	AC power cord for PC	2.5	Unshielded	Plastic	PC	AC outlet	-



3.6 System configuration [Parallel I/F mode]



Note 1: Numbers assigned to equipment or cables on this diagram correspond to the list in "2.1 EUT information", "3.4 Peripheral(s) used" and "3.5 Cable(s) used".

Note 2: RGB cable (No.c) with one ferrite core is accessory for Display (No.4).

## **4. Conducted emission at mains port test information**

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### **4.1 Measurement procedure**

Test receiver setting

- Detector: Quasi-peak, Average
- Bandwidth: 9kHz

Frequency range: 0.15MHz to 30MHz

Vertical Metal Reference Plane: 2.4m(W) × 2.7m(H) in size was placed 0.4m away from EUT.

Line Impedance Stabilization Network

- 50Ω/50μH
- LISN for EUT was placed 80cm away from EUT.
- LISN for peripheral was terminated in 50Ω.

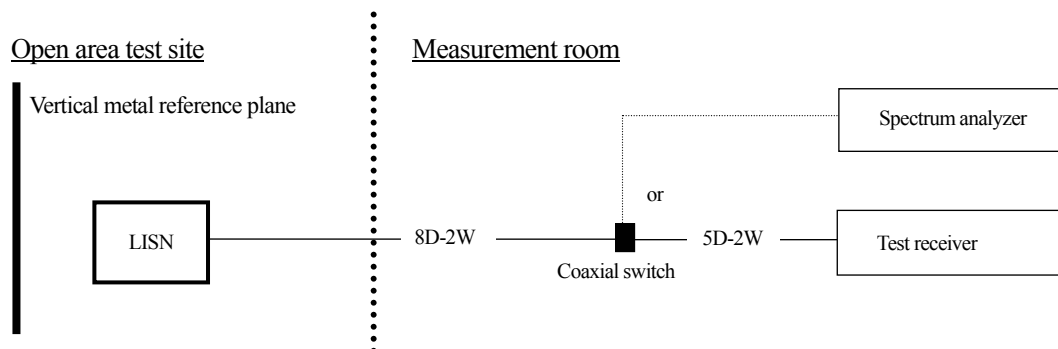
Reported emissions

- At least 6 points of maximum emission are reported.
- Maximum emission configuration was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation.

Others

- Table: Wooden table of 2.3m(W) × 1.0m(D) × 0.8m(H) in size
- Sufficient time for EUT, support equipment and test equipment were provided in order for them to warm up to their normal operating condition.

Test configuration for Conducted emission at mains port



#### 4.2 Test equipment for Conducted emission at mains port

Equipment	Company	Model No.	Serial No.	Cal. due
Spectrum analyzer	Agilent Technologies	E7405A	US41160344	Mar. 2005
Test receiver	ROHDE&SCHWARZ	ESHS10	842884/009	Jan. 2005
Line impedance stabilization network for peripheral	Kyoritsu Electrical Works, Ltd.	KNW-242C	8-1096-3	Mar. 2005
Line impedance stabilization network for EUT	Kyoritsu Electrical Works, Ltd.	KNW-407	8-693-19	Mar. 2005
50Ω terminator	Agilent Technologies	11593A	N/A	May. 2004
Coaxial cable	FUJIKURA	8D-2W/15m 5D-2W/1m	YTCRFC#1C	May. 2004
Coaxial switch	ANRITSU	MP59B	6100097273	May. 2004

\*The calibrations of the above equipment are traceable to NIST or equivalent standards of the reference organizations.

#### 4.3 Sample calculation

##### Conducted emission at mains port [Sample calculation]

Frequency	Class B limit		Sample of field strength calculation
	QP(dBμV)	AV(dBμV)	
0.15MHz to 0.5MHz	66 to 56*	56 to 46*	$dB_{\mu V} = 20 \log_{10} (\mu V)$ Limit @ 6.770MHz : 60.0dBμV(Quasi-peak) : 50.0dBμV(Average)  (Quasi peak) Reading = 51.2dBμV Cable loss + LISN factor = 0.3dB Total = 51.2 + 0.3 = 51.5dBμV Margin = 60.0 – 51.5 = 8.5dB  (Average) Reading = 45.0dBμV Cable loss + LISN factor = 0.3dB Total = 45.0 + 0.3 = 45.3dBμV Margin = 50.0 – 45.3 = 4.7dB
0.5MHz to 5MHz	56	46	
5MHz to 30MHz	60	50	

\* : The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

#### 4.4 Uncertainty

Expanded uncertainties stated were calculated with a coverage Factor k=2.

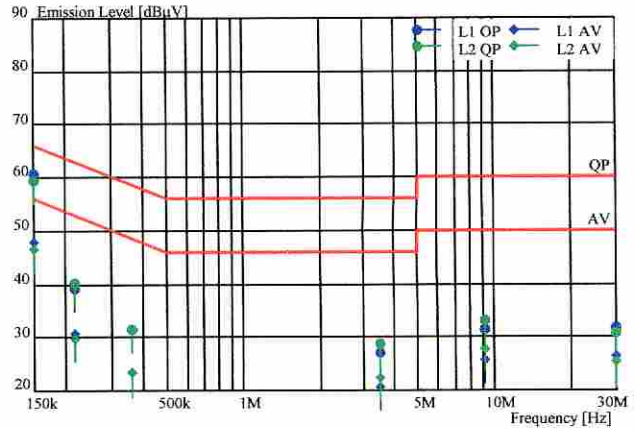
<b>±3.0dB</b>	··· For Conducted emission
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4.5 Test data

\*\*\*\*\* CONDUCTED EMISSION at MAINS PORT \*\*\*\*\*

Sheet number : 1

Standard : FCC Part 15 Subpart B  
 Class : B  
 Terminal : Mains  
 Date of test : 2004/3/31  
 Test site : 1  
 Temperature [°C] : 19.1  
 Humidity [%] : 39.3  
 Operator : T.Seino  
 Signature : *Tadachiro Seino*  
 Company name : FUJITSU ISOTEC LIMITED  
 EUT : Dot Matrix Printer  
 Model number : M3388A  
 Serial number : MA777051  
 Test mode : Serial I/F mode  
 Comment :



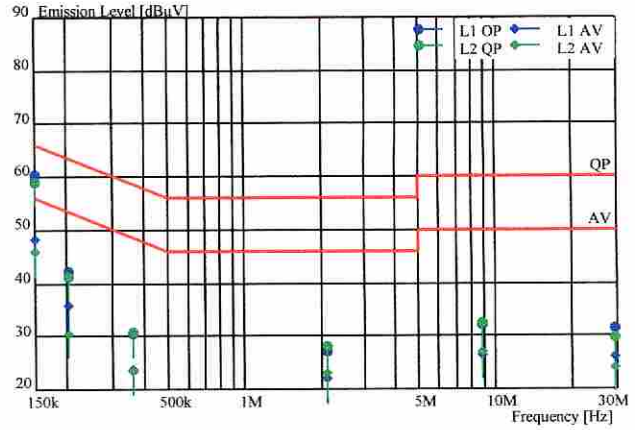
Phase	Frequency [MHz]	Reading		Factor [dB]	Emission level		Limit		Margin		Comment
		QP [dBµV]	AV [dBµV]		QP [dBµV]	AV [dBµV]	QP [dBµV]	AV [dBµV]	QP [dB]	AV [dB]	
L1	0.150	60.4	47.6	0.2	60.6	47.8	66.0	56.0	5.4	8.2	*
L1	0.215	39.0	30.7	0.2	39.2	30.9	63.0	53.0	23.8	22.1	
L1	0.365	31.5	23.4	0.1	31.6	23.5	58.6	48.6	27.0	25.1	
L1	3.476	26.8	20.6	0.2	27.0	20.8	56.0	46.0	29.0	25.2	
L1	9.205	30.9	25.2	0.5	31.4	25.7	60.0	50.0	28.6	24.3	
L1	29.684	30.3	24.8	1.6	31.9	26.4	60.0	50.0	28.1	23.6	
L2	0.150	59.3	46.4	0.2	59.5	46.6	66.0	56.0	6.5	9.4	
L2	0.215	40.1	29.7	0.2	40.3	29.9	63.0	53.0	22.7	23.1	
L2	0.365	31.5	23.1	0.1	31.6	23.2	58.6	48.6	27.0	25.4	
L2	3.476	28.4	22.2	0.2	28.6	22.4	56.0	46.0	27.4	23.6	
L2	9.205	32.6	27.4	0.5	33.1	27.9	60.0	50.0	26.9	22.1	
L2	29.684	29.2	23.7	1.6	30.8	25.3	60.0	50.0	29.2	24.7	

\*: The worst emission Factor : LISN Factor + Cable Loss

\*\*\*\*\* CONDUCTED EMISSION at MAINS PORT \*\*\*\*\*

Sheet number : 2

Standard : FCC Part 15 Subpart B  
 Class : B  
 Terminal : Mains  
 Date of test : 2004/3/31  
 Test site : 1  
 Temperature [°C] : 19.1  
 Humidity [%] : 39.3  
 Operator : T.Seino  
 Signature : *Tadokoro Seino*  
 Company name : FUJITSU ISOTEC LIMITED  
 EUT : Dot Matrix Printer  
 Model number : M3388A  
 Serial number : MA777051  
 Test mode : Pararel I/F mode  
 Comment :



Phase	Frequency [MHz]	Reading		Factor [dB]	Emission level		Limit		Margin		Comment
		QP [dBµV]	AV [dBµV]		QP [dBµV]	AV [dBµV]	QP [dBµV]	AV [dBµV]	QP [dB]	AV [dB]	
L1	0.150	60.3	48.0	0.2	60.5	48.2	66.0	56.0	5.5	7.8	*
L1	0.203	42.1	35.5	0.2	42.3	35.7	63.5	53.5	21.2	17.8	
L1	0.365	30.3	23.5	0.1	30.4	23.6	58.6	48.6	28.2	25.0	
L1	2.124	26.8	21.7	0.2	27.0	21.9	56.0	46.0	29.0	24.1	
L1	8.937	31.5	26.0	0.5	32.0	26.5	60.0	50.0	28.0	23.5	
L1	29.309	30.0	24.6	1.6	31.6	26.2	60.0	50.0	28.4	23.8	
L2	0.150	58.8	45.6	0.2	59.0	45.8	66.0	56.0	7.0	10.2	
L2	0.203	40.9	30.3	0.2	41.1	30.5	63.5	53.5	22.4	23.0	
L2	0.365	30.8	23.4	0.1	30.9	23.5	58.6	48.6	27.7	25.1	
L2	2.124	28.0	22.7	0.2	28.2	22.9	56.0	46.0	27.8	23.1	
L2	8.937	32.0	26.5	0.5	32.5	27.0	60.0	50.0	27.5	23.0	
L2	29.309	28.2	22.4	1.6	29.8	24.0	60.0	50.0	30.2	26.0	

\* : The worst emission Factor : LISN Factor + Cable Loss

## ***5. Laboratory description***

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### **1. Location:** ZACTA Technology Corporation Yonezawa Testing Center

4149-7 Hachimanpara 5-chome Yonezawa-shi Yamagata 992-1128 Japan  
Phone: +81-238-28-2880 Fax: +81-238-28-2888

### **2. Facility type:**

Site name: Site 1, Site 2 and Site 3 - Total 3 sites.

Site type : Whether protected site

\*3m/10m Radiated emission & Conducted emission testing can be performed on each site

3m anechoic chamber

Shielded room

### **3. Facility filing information:**

1) FCC site filing: Pursuant to CFR47 § 2.948

<b>Site name</b>	<b>Filing date</b> <b>(Terms of validity: 3 years)</b>
Site 1, Site 2 and Site 3	December 17, 2002

2) Industry Canada Oats site filing: Pursuant to RSS 212, Issue 1(Provisional)

<b>Site name</b>	<b>Sites on file:</b> <b>Oats 3m/10m</b>	<b>Filing date</b> <b>(Terms of validity: 3 years)</b>
Site 1	4224-1	January 11, 2005
Site 2	4224-2	January 11, 2005
Site 3	4224-3	January 11, 2005

3) VCCI site filing: Pursuant to V-5/2003.04 VCCI regulations for registration of measurement facilities

<b>Site name</b>	<b>Radiated emission</b> <b>registration No.</b>	<b>Conducted emission</b> <b>registration No.</b>	<b>Duration of registration</b>
Site 1	R-136	C-132	September 30, 2006
Site 2	R-137	C-133	September 30, 2006
Site 3	R-138	C-134	September 30, 2006

4) NVLAP accreditation:

NVLAP Lab. code: 200306-0

This test report must not be used by client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

5) ETL SEMKO authorization:

Authorized as an EMC test laboratory.

6) TUV Rheinland authorization:

Authorized as an EMC test laboratory.